

New Worlds

and the Nuclear Age

John Hinkson

Reflections on the social form of the scientific age

The fear of the power of nuclear weapons since 1945 has been widely shared by publics everywhere. Suddenly, after the unrelenting horrors of six years of world war, people were confronted by destructive powers they had no way of comprehending: previous forms of warfare were not comparable and this new power seemed to come from nowhere—it was entirely mysterious, except for the known fact that scientists had made it possible. As will be argued, the cultural world, including our relation to nature, as figured in this moment, changed profoundly. Fear was a rational response in the first instance, but where to after that? Suppressing fear in order to act has been the predominant response: that is, in order to act within the terms of the familiar, nuclear power has been treated as a mere dangerous technology.

In the face of the unknown, then, societies opted for development and control. They have embraced the technology and explored its possibilities socially while introducing controls that attempt to minimise its more obvious negative potentials. While perhaps unintended, this strategy abandons any attempt to stand back from and reflect on the meanings of this emergence. Arguably, this means of suppressing fear is an integral part of our present way of life, transforming the conditions of existence and who we are as human beings.

However difficult it may be to make sense of this development, the main point is that it is not an emergence along some simple continuum of technological change and progress: it is a qualitative shift, with profound implications. It is a shift that ultimately places all species, including *Homo sapiens*, at risk. This risk does not only arise out of the destructiveness of nuclear weapons, however. There have been many transformations of social relations that are related to the nuclear 'breakthrough', or the mode of science it stands for, while a lack of conceptual capacity to interpret this breakthrough contributes to an ongoing blindness to its basic social consequences.

The responses of scientists to the realisation of nuclear power were deeply ambiguous, and also suggestive. On the one hand the physicists involved had toiled to solve problems at all levels, conceptual and practical, to manufacture this most abstract of military technologies: the splitting of the atom for destructive purposes. On the other they were typically awed by that capacity and fearful of their own creation.

That the discovery of nuclear power opened up an utterly distinctive set of possibilities was metaphorically recognised immediately by the scientists involved. Robert Jungk (in *Brighter than a Thousand Suns*) reported on the first nuclear explosion:

They all, even those—who constituted the majority—ordinarily without religious faith or even any inclination thereto, recounted their experiences in words derived from the linguistic fields of myth and theology. General Farrell, for example, states: 'The whole country was lighted by a searing light with an intensity many times that of the midday sun... Thirty seconds after the explosion came, first, the air blast pressing hard against the people and things, to be followed almost immediately by the strong, sustained, awesome roar which warned of doomsday and made us feel that we puny things were blasphemous to dare tamper with the forces heretofore reserved to the Almighty... It had to be witnessed to be realized.'

And the science writer William Lawrence wrote, drawing on the notion of the light of creation:

And just at that instant there arose as if from the bowels of the earth a light not of this world, the light of many suns in one. It was a sunrise such as the world has never seen, a great green supersun climbing in a fraction of a second to the height of more than 8000 feet...lighting up earth and sky all around with a dazzling luminosity...

The big boom came about a hundred seconds after the great flash—the first cry of a new-born world...

This and many other uses of metaphor to give recognition to a break with the past and the birth of another, largely unknown, order was entirely apposite. But what is the nature of this world apart from the brute power that had been unleashed and the ambivalent fear it produced? Religious and mythic metaphors opened up possibilities for understanding, but this expression of awe and apprehension was quickly normalised within the terms of the social institutions of the day. This process of normalisation has shaped our response ever since.

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'Beyond
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Beyond normalisation?

At the centre of this transformation are new scientific powers, powers that take a novel approach to nature in general. Before the twentieth century, marked symbolically by the work of Albert Einstein, the sciences had only an indirect relation to the transformation of nature via the productive process and economy. In this sense they were predominantly interpretative. The work of Einstein, too, was in an interpretative mode, but his initially 'disinterested' conception of the physical world would be vastly consequential for the contemporary era of high technology and hyper production. As Geoff Sharp once argued, the relation of scientists to economic production even for nineteenth-century capitalism predominantly entailed the study of economic production in order to understand its processes and to further enhance them practically. The steam engine is an example.

While Einstein did not believe that nuclear power was a practical possibility (and had little interest in such an outcome), that possibility was made real exactly through his re-conceptualisation of the elements of the natural. Einstein represents a change in the sense that the abstract ideas of his era would come, through further challenge and refinement, to release unprecedented powers and, crucially, would enter directly into the productive process. The related developments of the quantum revolution, cybernetics and information theory were, in a similar fashion, markers of what is an epochal transformation in our relationship to nature, whereby abstract ideas would be studied as means—that is, as technological elements within economy. The technologies that emerge in this period are thus *high* technologies, or rather, scientific technologies, oriented to the problems and capacities of a world viewed through a scientific lens.

The potential of this emerging relation of scientific practices to the world of economy and production became more and more conscious—on the part of the sciences and of the capitalist order, the two institutional spheres commencing a mutual reorganisation of the social world. Transforming economy progressively since the Second World War, this process culminated in the high-tech globalisation that took off in the 1980s, with neoliberalism its mode of governance. But it triggered processes that reach far beyond previous sites and modes of economic activity—for example, offering the transformation of individual and species biology via genetic engineering as now the source of the productive possibilities are processes associated with biotechnology. Reconstitution of the given elements of life and the object world via the practical abstractions of techno-science would become the elements and processes of new means and foci of production.

At the centre of this institutional transformation lies the transformation of the university from at base an interpretative (and in that sense educa-

tional) institution to one predominantly preoccupied with the possibilities of reconstituted nature. A correlate of that opening up of this new world of economic possibility is that the university is now only incidentally educational, as it is fundamentally shaped by and shapes the capitalist order.

Thinking about economy in this light may seem a world away from the emergence of nuclear technologies. Yet the rise to power of intellectual technologies and scientisation of life in this period has transformed life and economy progressively. The left tradition, so well based in capitalist economy, has in this context been fractured in stages. It could no longer simply rely on the working class as a key source of social agency in society. A new social force (usually ignored or resented) had become the key agent, not only transforming the institutional world but also, over time, the composition of occupational structures.

The social classes are crucial reference points of social process, social contradiction and social possibility. But the development associated with intellectual practices poses a new problem for any approach to the world that grounds itself in the social: typically, interpretation has ignored the social nature and significance of this new agency in the world. Largely ignored by Marx, and in any case a far less imposing factor in the historically bounded world he analysed, culture—in the form of intellectual practices—has transformed social structure as well as our way of life.

That the discovery of nuclear power opened up an utterly distinctive set of possibilities was metaphorically recognised immediately by the scientists involved.

Geoff Sharp argued consistently about the need to give intellectual practices a social meaning, given their social significance for the material world today. Instead of viewing these practices as driven by 'highly intelligent' individuals, they should be seen as emergent from distinctive social relations. His work on the social networks of intellectuals allowed that grouping (and the 'intellectually trained') to be theorised as socially formed through networks of interchange, rather than through the social relations of the 'group'. While many observers loosely employ a concept of the network—often no more than multiple moving connections (which largely focus on individuals)—Geoff theorised a distinctive social quality that applied to such networks: that they were generated via relations of practical absence, in contrast to social relations grounded in the face-to-face, or embodied being. These would be conducive, and indeed constitutive, of a world set adrift from its moorings in a once taken-for-granted world of a certain level of materiality.

With this insight into the social form of scientific and intellectual practice it is possible that the practices of scientists and other intellectuals could be redirected—away from the poisonous embrace of capitalism. In an earlier period, scientists with a clear anti-capitalist and social outlook—such as Alan Roberts, to whom this essay is dedicated—carried this hope and made it real in their political interventions as scientists. For the moment, under present conditions, the work of science and scientists in the service of contemporary consumption has almost been wholly normalised within a utilitarian and productivist outlook.

Normalisation: the military practice of the nuclear era

Normalisation of nuclear power has especially been at great cost to the world. In the United States, where the Bomb was first constructed, normalisation carried a destructive transformation. This was seen from the earliest days—a transformation that has poisoned the character of the United States, in more ways than one. The act of discovery itself carried enormous costs, not just in money terms but for the social order generally. Niels Bohr, the well-known theorist of quantum physics, predicted this, based on the complex processes necessary to release nuclear energies from nature, long before the Bomb itself was successfully constructed. As Adam Becker reports (in *What Is Real?*), Edward Teller was showing Bohr around the Los Alamos facilities to demonstrate that Bohr’s pessimism was misguided when, ‘before I could open my mouth, Bohr said, “You see, I told you it couldn’t be done without turning the whole country into a factory. You have done just that”’.

Becker continues:

Bohr was more right than he knew. By the end of the war, the Manhattan Project had cost the nation nearly \$25 billion, employing 125,000 people at thirty-one different locations across the United States and Canada... After the war ended, physics research in the United States never returned to what it was before the war. Damned by their success in building the bomb, military research dollars poured into physics... Less than a decade after the war, in 1953, physics research funding was just shy of \$400 million—an increase by a factor of twenty-five in just fifteen years. And, by 1954, 98 percent of the money for basic research in the physical sciences in the United States was coming from the military or defense-oriented government agencies, like the Atomic Energy Commission, successor to the Manhattan Project.

This speaks to a long-term process that fanned out from seeming military and economic imperatives to revolutionise US social institutions. The military-industrial complex is one representation of this. It was also inseparable from a heightened sense of risk in the world more generally—a continuation of the stresses of the Great Depression in turn embedded in the turmoil of the Second World War. The Bomb would trigger such institutional developments as the National Security Agency and the CIA, as well as the traumas, threats and struggles of the Cold War. Bedding all this down, the United States embraced the militarisation of its society, moreover a militarism with a Doomsday threat. Both the sense of risk and this militaristic embrace possess the United States to this day, and support a particular imperial mindset and outreach. It is the only nation state that has actually deployed nuclear bombs in warfare: despite denials, which include arguments about the greater good of its liberal-democratic commitment, it has been deeply shaped by this deployment.

Daniel Ellsberg in a recent book uncovers for a general readership just what normalisation of nuclear power has meant in terms of military planning. Ellsberg was the whistleblower who wrote the *Pentagon Papers*, an intervention that contributed to the defeat of the United States in Vietnam. He can hardly avoid an ambiguous place in our thoughts: on the one hand necessarily an

insider within the very institutions that pursued the Vietnam War, on the other that rare individual who is not entirely consumed by the institutional order that he can’t act (morally) when he feels it is necessary. For many years he also worked within the core institution of the postwar new order, the National Security Council, as an assessor of procedures associated with the handling of nuclear weapons.

In *The Doomsday Machine: Confessions of a Nuclear War Planner* Ellsberg gives a detailed account of military planning from inside the US administration from the early days of the nuclear era. Perhaps most shockingly, he shows the callous disregard for human life in the planning calculations of the Joint Chiefs of Staff, given his access to documents that most people don’t know exist. In relation to plans for a first strike against the USSR and China, these documents reveal quite incredible preparations and acceptance of mass death:

One of the principal expected effects of this plan...was summarized on that second piece of paper, which I held a week later in the spring of 1961: the extermination of over half a billion people.

This was not in any sense fantasy or loose thinking. It was actual planning, contingent on a decision to attack. As Ellsberg makes plain, this was a form of incompetence because it did not reflect the reality of the consequences of nuclear attack—of ‘nuclear winter’, for example, which would make life on earth for most species impossible. Although ‘this machine wasn’t likely to kill outright or starve to death literally every last human, its effects, once triggered, would come close enough to that to deserve the name Doomsday’. There was no sign, Ellsberg insists, of in-depth knowledge of nuclear-winter effects among US decision-makers or presidents. In recent times this situation has worsened. The dismissal in relation to climate change of scientific authorities (regarded as carriers of ‘false news’) has had general effects that make doomsday even more likely.

It is over seventy years since the first actual deployment of the Bomb. There has been constant use of threats to use the Bomb since that time but no actual deployment in warfare. This has furthered the normalisation process; ironically, this creates a sense that the threat has diminished. In fact this is direly wrong. According to Ellsberg, plans for a first strike aimed at Russia and China ‘remain as they were almost sixty years ago’. There has been much talk of a ‘no first strike’ on the part of the United States, but Ellsberg makes clear that all US plans assume a first strike by them in order to ‘limit the damage to the United States’ of any subsequent retaliation. While publics have been encouraged to see nuclear policy as defensive, the leading nation of the



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'Free World' is in fact perched ready to pursue its interests with aggressive nuclear intent.

Contrary to official declarations, the capacity to make the decision to use a nuclear bomb is widely diffused across the military. This is partly because any presidential authorisation is problematic militarily, as the president could be disabled at a crucial moment. The dilemmas of control of weapons like this are overwhelming:

I accepted, as inescapable, the idea of Eisenhower's delegation of authority to execute war plans to a handful of four-star admirals and generals outside Washington. But I had growing unease, to put it mildly, at the prospect that this delegation reverberated downward in a widening circle that permitted authorized launch by more and more subordinate commanders, not to mention the physical possibility of *unauthorized* initiative at that same level, either by an aberrant commander or perhaps by one of his subordinates...

The degree to which we exist on the edge of nuclear engagement since the dawn of the nuclear era cannot be overstated.

Just how close we have come to Armageddon can be told in various ways, but the account Ellsberg gives of Curtis LeMay is a good start. A leading figure in the 'science of fire-bombing' of cities in order to maximise civilian deaths—practically tested in Tokyo with large-scale napalm bombing before Hiroshima—and John Kennedy's chief of staff of the air force, LeMay was a leading figure in the militarisation of the United States:

Suppose that Washington had not been hit, he said, when warning of an enemy attack came in. Should the president be part of the decision process at all, he asked us, even if he were alive and in communication? ... Speaking gruffly, he asked rhetorically, 'After all, who is more qualified to make that decision [whether to go to nuclear war]: some politician who may have been in office for only a couple of months...or a man who has been preparing all his adult life to make it?'

Normalisation in social life

The militarisation of societies in the nuclear age can be seen most clearly in the United States. In one guise it is a process that has a relatively narrow focus, related to 'control' of nuclear weapons and their effects. The effects upon ways of life of intellectual technologies is a larger matter still. These effects have been diffused far and wide, even though it can be argued that the core institutions that have supported these developments first arose in the United States. Let me take two examples of social developments related to intellectual technologies: globalisation and social media.

The globalisation of economy and ways of life—the orientation of institutions towards global processes—is premised on taking for granted the augmentation of capitalist economy by intellectual

practices. One key example to illustrate this is the computer revolution. It has been a story of progressive stages of development since the Second World War, a development inseparable from the revolution of intellectual technique associated with research academies and universities that had such a stunning impact with the development of the nuclear bomb. For computerisation, the breakthrough was the silicon chip of the 1970s, which so enhanced computerisation that it made practical reach across nation states and deregulation of economies possible.

Economic globalisation, a source of trauma for many local economies, presented as largely a technical matter, was structured upon an organised political decision by global institutions, but this in turn was premised upon the form of intellectual interchange—the social form of science, and intellectual practice more generally. Because these technologies also support the modification of social relations through technological mediation such that the 'other' is increasingly absent in our relations, this is a transformation with deep moral implications as well—one that leads us to be far less firmly anchored in place or any community grounded in face-to-face others through time. Generational social relations are thinned out and often regarded to be of diminishing value, as is local economy. The fantasy of global tourism is normalised.

This is a process that affects social process generally, although it is more intense in some settings. Social media are premised on the absence of the embodied other, and their projects so evidently carry the dangers of this thinned-out form of communication. Facilitated by media and the computer, they shift the reference points of people's lives away from known others in generational and community relations towards relatively fleeting others, mediated by technology. This is now the social world of a large proportion of the young, a world of constant mental and communicative activity, but posing the risk of never touching down or becoming part of more condensed relations around which enduring meanings might form. Indeed any fixity in the social and natural world begins to look old-fashioned.

Conclusion

The nuclear age is inseparable from the high-tech age, and vice versa. The practices of the intellectual institutions, and their impact upon nature and social life, are enveloping. However, the significance of the Bomb and its threat to life as compared to the problems associated with contemporary ways of life is much greater for most people. Contemporary ways of life are deeply taken for granted, but nuclear destruction is, when brought to consciousness, a focus of existential concern.

The reason for this is plain enough if we visit the scene of destruction of Hiroshima, as recounted by Masuji Ibusi in *Black Rain*:

The people in the street by the shrine grounds were all covered over their heads and shoulders with something resembling dust or ash. There was not one of them who was not bleeding. They bled from the head, from the face, from the hands; those who were naked bled from the chest, from the back, from the thighs, from any place from which it was possible to bleed. One woman, her cheeks so swollen that they drooped on either side in heavy pouches, walked with her arms stretched out before her, hands drooping forlornly, like a ghost. A man without a stitch of clothing on came jogging along the road with his body bent forward and his hands between his legs, for all the world like someone about to enter the communal tub at a public bathhouse. There was a woman in her slip who ran wearily along the road groaning as she went. Another carrying a baby in her arms, crying, 'Water! Water!' and constantly wiping at the baby's eyes between her cries. Its eyes were clogged with some substance like ash. A man shouting at the top of his voice; women and children shrieking as they ran; others crying for relief from their pain...

All these I saw in less than two hundred yards as I walked from Yokogawa Station along the highway towards Mitaki Park.

This shocking event, the like of which the world had never known before, brings home how the highest level of scientific research, dedicated apparently to the good of humanity and a showcase for our 'most brilliant minds', turned upon itself to produce mayhem and unspeakable suffering. It is the cultural contradiction—of hope and intent versus life and death according to the new techno-powers—that inaugurated our era.

This may be the most alarming, most immediately and existentially disturbing moment at the dawn of the nuclear age, and it cannot but lay out the contours of the dominant forms of life and economy today, and our basic responses to them. But the social world we live in has other expressions of cultural contradiction that may yet be more confronting and traumatising than even the shocking experiences of the Hibakusha in Hiroshima, for the transformations that follow from the revolution of intellectual practices leave nothing untouched, everything upended.

Climate change is a case in point. While we owe much to those scientists who have researched and named the crises of climate change in resistance to the assumptions of the 'developed' world, they have not been able to address climate change as a social and cultural crisis. More to the point, they typically ignore, or cannot see, their own social complicity in the new world in which the radically enhanced powers of intellectual practices are utterly enmeshed with capitalism, generating

unsustainable consumption demands upon the Earth. It is no accident that the reduction of climate change to issues of emissions of carbon dioxide leaves untouched the main framework of contemporary production and social life, and the cultural desire to continue exploration of new worlds through expansion—even the colonisation of space beyond Earth. Climate change will not be seriously addressed through better problem solving or new technological advances that merely deepen the relation between capital and intellectual practices. Those engaged in intellectual practices need to address their social location and the form of their activity if they are to assist with the interpretative question of how we might live otherwise. This will require a new social consciousness of responsibility towards life on the ground—not capital.

The nuclear age heralds much more than the possibility of nuclear destruction. It introduces a profound social transformation in which we no longer take nature for granted; while always in process to some degree, it is now being radically transformed by a capitalism intertwined with intellectual practices. The evolutionary process—the background reference point for *Homo sapiens* as well as all species—as well as our fundamental dependence on Earth, comes under challenge. As our social relations shift towards relations no longer grounded in the face to face, we approach a world devoid of those human cultures that have always formed *Homo sapiens*: on both counts—our being in the natural world and our formation in the social. **a**

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Existential Risk

David Spratt

David Spratt is the co-author, with Ian Dunlop, of **What Lies Beneath: The Underestimation of Existential Climate Risk** and research director for Breakthrough National Centre for Climate Restoration.

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